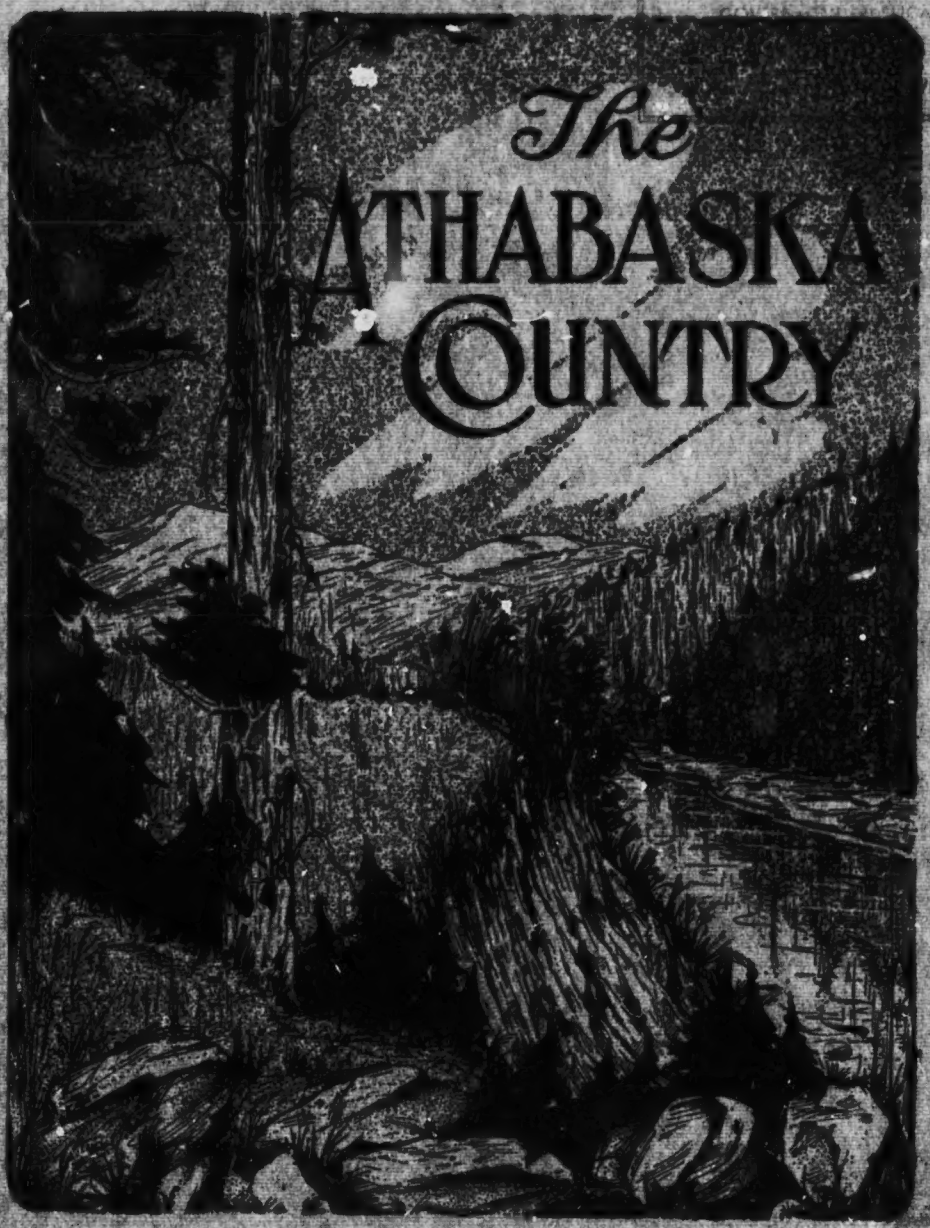


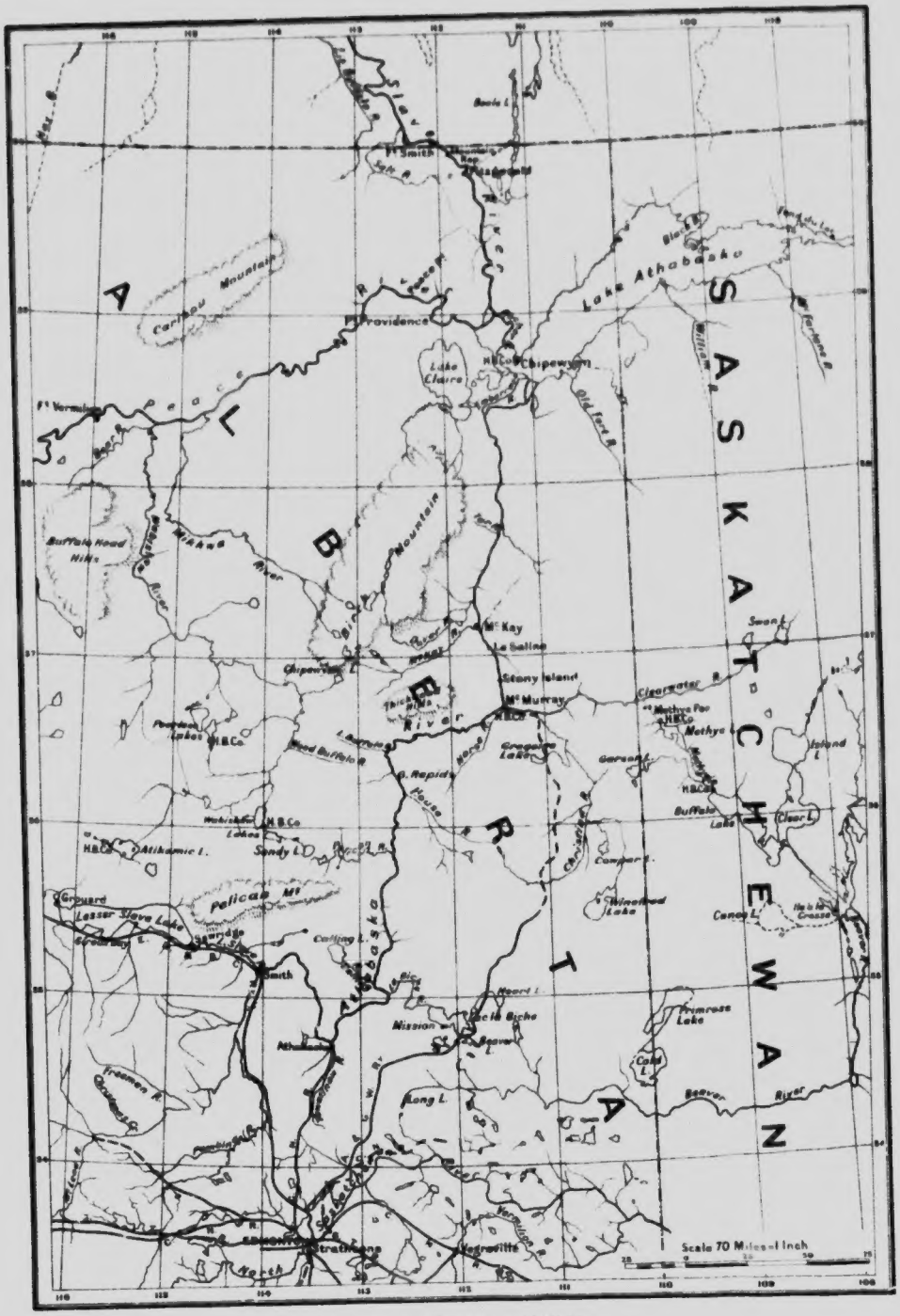
The ATHABASKA COUNTRY

1916

DEPARTMENT OF THE INTERIOR
CANADA

Hon. W. J. ROCHE, Minister — W. W. CORY, C.M.G., Deputy Minister

Prepared in the
RAILWAY LANDS BRANCH
under the direction of F. C. C. LYNCH, Superintendent



THE ATHABASKA COUNTRY

The Athabaska River Country

A compilation of all authentic information available as to the resources and possibilities of the Athabaska river basin

1916

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REVISED EDITION OF PORTIONS OF THE UNEXPLOITED
WEST COMPILED BY ERNEST J. CHAMBERS,
LT.-COL., CORPS OF GUIDES.

HISTORY AND AGRICULTURE.

Athabaska river, which is the most southerly of the three great tributaries of the Mackenzie, rises in Rocky mountains near Mount Brown, at an altitude of about five thousand seven hundred feet, and pursues a northeasterly and northerly course for nearly six hundred miles to Athabaska lake, falling in this distance some five thousand feet, and being interrupted by several series of rapids. In the first three hundred miles of its course it falls about four thousand feet, and receives in succession Baptiste river from the west, the McLeod and Pembina from the south, and the Lesser Slave, draining the large lake of that name, from the west. Below its confluence with the last named stream, the Athabaska turns south eastward for some fifty miles and then resumes its

Scows tied up at foot of Grand Rapids, Athabaska river.

southerly course. In the course of the next one hundred and fifty miles it receives, in succession, La Biche river from the east; Calling river from the west; Big Mouth brook from the east; Pelican river from the west; and House river from the east. Just below the mouth of the last river the Athabaska strikes a range of low hills, and in forcing a passage through them is deflected eastward, and for a distance of about seventy-five miles contains many rapids, falling in this distance some four hundred feet. The river is fed by numerous tributaries and the district is covered by a net work of small creeks and lakes, both large and small. At the lower end of this stretch it receives the waters of Clearwater river, its principal tributary below Lesser Slave river. The

Clearwater rises on the height of land between the Churchill and the Athabaska, and pursuing a nearly straight easterly course for some one hundred and fifty miles, mingles its limpid waters with the sediment laden flood of the latter stream. In the lower part of its course the Clearwater occupies a deep valley and is very rapid. Thirty or forty miles above its mouth it is joined by the Christina, a stream of about equal volume. Below the mouth of the Clearwater the Athabaska pursues a nearly direct course northward, receiving McKay, Dover, and Tar rivers from the west, and enters Athabaska lake through a number of channels including alluvial islands. From its source to Athabaska and onward to Grand Rapids the character of the country traversed is flat, without hills or mountains. From this point to McMurray the river runs between high banks, but thereafter, or until it empties into lake Athabaska, it traverses a low lying district of meadow and marsh land.

Lake Athabaska was known to the pioneer fur-traders and explorers as "Lake of the Hills," and it is so described by Mackenzie and others.

The country drained by the Athabaska is

Mainly a Rolling Plain

and with the exception of a few areas of semi-prairie land, is well wooded, with a forest composed mainly of spruce, fir, pine, tamarack, poplar, birch and willow. A large part of its surface is occupied by mossy swamps, called muskegs, and hundreds of ponds and lakes, of which Lesser Slave, seventy miles in length, is by far the largest, occupy its shallow valleys. Immense areas have been swept by fire, sometimes repeatedly, and in some places the original forest covering has been destroyed and small prairies have succeeded.

The first information we obtained as to the agricultural possibilities of the Athabaska basin came from explorers and travellers passing through the most northern portion of it on their way to Peace river, Great Slave lake and the Mackenzie via the old canoe route by Methye portage and the Clearwater. In more recent years, particularly since the inauguration of steamboat communication along the long navigable stretches of the Athabaska and Mackenzie, the favourite route to the far northwest has been down the Athabaska from Athabaska, and, as is only natural, our knowledge of the resources of the country has increased greatly.

Sir Alexander Mackenzie, as far back as 1787, saw at a trading station of Peter Pond, on Elk or Athabaska river, "as fine a kitchen garden as he ever saw in Canada."

It might be explained here, that in the spring of 1778, a number of the Saskatchewan traders put their goods into a common stock, and placed Mr. Peter Pond in charge of them, directing him to proceed to the Athabaska and trade with the Indians. He took the present Hudson's Bay Company's route, by Cumberland House, Frog portage, Ile à la Crosse, and on to Methye

portage and down Clearwater river to the forks of the Athabaska. Here he built a house, and in the spring of 1779 planted garden seeds.

As a general thing, at the early trading posts, agriculture of any kind, even the making of gardens, was neglected, and, rightly or wrongly, the officials of the Hudson's Bay Company got the credit of discouraging such ventures. If this had ever actually been the settled policy of the company, it was officially abandoned some time previous to the year 1826, for, writing in the year mentioned at Chipewyan (north latitude 58° 40′) of improvements in the country, the

Result of Judicious Arrangements

then recently effected by the directors of the Hudson's Bay Company, Sir John Franklin writes: —"They (the directors) have also directed, where the soil will allow, a portion of the ground to be cultivated for the growth of culinary vegetables at each of their establishments, and I witnessed the good effort of this order, even at this advanced post, where the ground is rocky; the tables of the officers being supplied daily and those of the men frequently, with potatoes and barley. Such luxuries were very rarely found beyond Cumberland House on the route that we travelled during my former journey."

Sir John Franklin also mentioned a phenomenon which has a considerable bearing upon the agricultural possibilities of this country, namely, the quick change from winter to summer and the rapid growth of vegetation. He wrote of the advent of spring at Chipewyan in 1827:

"There can scarcely be a higher gratification than that which is enjoyed in this country in witnessing the rapid change which takes place in the course of a few days in the spring. Scarcely does the snow disappear from the ground before the trees are clothed with thick foliage, the shrubs open their leaves, and put forth their variegated flowers, and the

Whole Prospect Becomes Animating."

Sir John also mentioned that the first flight of swans northward was noticed at Chipewyan on April 15, the first geese on April 20, the first robins on May 7, and the first house martins on May 12. Barley was sown at Chipewyan on May 15, potatoes on May 21, and garden seeds on May 22, and it was expected that all would be ready for use by the close of the following September.

Sir George Simpson's party was regaled with "new, but very small, potatoes," on August 11, 1828.

Sir J. Richardson, before the British parliamentary select committee of 1857, when asked to state to the committee any general opinion which he had formed of the capabilities of any considerable portion of the country which he had traversed for the purpose of settlement and colonization, replied: —"With regard to the production of cereals, wheat may be grown up to the

58th parallel of latitude (same latitude as Fort Vermilion) in favourable places, but only in parts."

The report of the Dominion Government's survey parties sent out in advance of the Canadian Pacific contain important references to agriculture in the country. In the report for 1877 78 (p. 332) appears the following reference to Chipewyan (latitude 58.7°): "Professor Macoun there obtained in 1876, fine samples of wheat and barley the former sixty-eight pounds to the bushel and the latter fifty-eight pounds. At the French mission, two miles above the fort, oats, wheat and barley were all cut by August 26." In the 1880 report it is stated (p. 102), "Reverend Dr. Gordon said in 1880 that wheat and barley raised at Chipewyan received a medal at the Philadelphia Centennial Exhibition of 1876."

In the report of 1877–78 (p. 326) there is this reference to McMurray (latitude 56.7°): "Professor Macoun on September 8, 1875, found tomatoes, cucumbers, wheat and barley, under cultivation together with all vegetables found in kitchen gardens in Ontario. He spent ten days there and obtained specimens of wheat and barley which

Have Astonished Everyone

to whom they were exhibited; many of the ears contained one hundred grains and the weight of both wheat and barley was nearly ten pounds above the ordinary weight per bushel. These grains had been raised on soil comparatively poor—very poor for the district—and lying only a few feet above the level of lake Athabaska."

In a report of his then recent trip through this country, William Ogilvie, D.L.S., in 1884, wrote:—"A great deal of the soil along the bank of the Athabaska was of very fair quality. At McMurray, where there are a couple of small prairies or meadows, the soil is good, and the root crops and garden produce raised there are generally very good. The Hudson's Bay Company has a garden at McMurray of upwards of an acre in extent, and the Episcopal mission one of smaller area, but the soil is very sandy. The Roman Catholic mission has a garden also, most of which they obtained by draining a bog into the lake. In the season of 1883 (which was a pretty favourable one in that district, being free from summer frosts) the Hudson's Bay Company raised about four hundred bushels of potatoes, the Episcopal mission thirty bushels on a small patch, and the Roman Catholic mission about five hundred bushels. Many of the retired Hudson's Bay Company's servants also have small patches which they cultivate, potatoes and fish being the principal articles of food used during the winter."

According to evidence taken before the Senate Committee of 1907 the land at McMurray is good and between the junction of the Clearwater and the Athabaska there is a flat of land about three miles long and from a quarter of a mile to a mile and a half or two miles wide, which is very fine soil; but the rest of it is all hills covered by an inch and a half of moss, under the moss

being the limestone rock. They raise good garden stuff at McMurray. A party there had good crops for three years.

Where there is soil to be found it is very good, mostly old river beds or where eddies have accumulated soil; but the rest is sand and muskeg. East of McMurray there are several lakes, the centre of what is described as fine hay country. The natives there have from sixty to eighty horses, and there are reported to be

Good Grazing Patches

round the lakes. It is probably a better ranching country than an agricultural one. To the northwest of this district are some muskeg lakes, where the natives have quite a few horses and cut considerable hay.

Meadow land at Fitzgerald; soil in this locality is a black loam overlying sandy clay.

From Fort Smith, going in a southerly direction to a place called Salt river they have a very fine large prairie, and it extends right through to Peace point. The people there are not given to farming. It is against their interests, because they could make a living much more easily by hunting. People often ask why they do not farm, but it must be remembered that in order to raise a crop of potatoes they would have to stay by it the whole season; and there is more variety in hunting. But some of them do farm and raise a few cattle. The country is difficult of access; they do not get any new stock and it has become badly inbred. As a result there have been seen cattle having the head of a bull and the body of a calf. There are not very many cattle in there; only certain natives have them, and a man with four or five is a very rich man. Some patches of land are very good. In the vicinity of the

northern shores of lake Athabaska there is no place where grass can be grown. It is mostly rock and muskeg.

Mr. Elihu Stewart, who had travelled over the northwest while Superintendent of Forestry, stated before the Senate committee of 1907 that along the Athabaska the country is composed of a succession of rolling hills with a good deal of light soil. The valleys are very good, and Mr. Stewart understood stood that the country from lake Wabiskaw to Lesser Slave lake contains good land, practically all the way through. Along the Athabaska the country is light, second-class land, but Mr. Stewart found at Calling river, some sixty miles below Athabaska, a man

Raising Wheat there.

He says he raises as good wheat as can be grown, but Mr. Stewart would not consider from the appearance along the banks that there were the same alluvial deposits that are found farther north.

Mr. H. A. Conroy, of the Indian Department, informed the Senate committee in 1907 that the Indians and half-breeds told him that the country between Slave and Hay rivers is covered with buffalo grass, excepting a little timber that grows in a fringe around Great Slave lake. He had information from Indians living in that country that it is an open country covered with prairie grass.

W. F. Bredin, late member of the Alberta Legislature, in his evidence before the Senate committee of 1907, said that descending Athabaska river from McMurray, where Clearwater river goes into the Athabaska, the elevation of the plateau above the river is very much less than it is on the upper river. It looks like a great alluvial plain, from the river all along from McMurray to lake Athabaska, two hundred miles. That country is more or less timbered, and the soil is excellent. Going down Slave river to Great Slave lake, for a distance of three hundred miles, on the east of Slave river, it is all rocks; while west of the river the country is all alluvial, and the soil is generally very good, right down to Great Slave lake.

At Chipewyan on Athabaska lake the Roman Catholic priests have a farm which was originally a muskeg, right amongst the Laurentian rocks, and they grow wheat there that was awarded a

Medal at the Centennial Exposition in 1876.

The muskeg between the Athabaska and the Peace can all be drained and cultivated. These muskegs are from a foot to three feet deep until you strike hardpan. The moss keeps the heat of the sun out. In fact there is ice in some of those muskegs all the year round, covered with moss.

As the result of the exploration of the country west of Methye and Buffalo lakes and south of Clearwater river it was stated that along Christina river there are fine hay meadows which should enable anybody who desired to keep

cattle to procure ample feed for the winter. To the west of Cowpar lake there is a large prairie which would certainly afford magnificent summer range, though in winter the snow would be too deep for cattle to remain out. Northwest of Cowpar lake some horses were seen grazing in December. Their owner had made no arrangement to winter them and yet the horses thrived.

Cowpar lake lies just south of latitude 56°. It is a small lake, and of itself of no great importance. The surrounding country, however, is exceptionally good farming land, and to the east and south, at about ten miles distance, is found the commencement of a large prairie about forty miles long and varying from twelve to fifteen miles in width. This prairie is in its present state fitted for agriculture. The Indians from Cowpar lake go there in the spring and plant gardens leaving them until the fall when they bring the produce to their homes at Cowpar lake.

Christina river flows through the south end of this prairie and several small lakes touch it. The prairie is watered by small creeks draining into these lakes, and altogether it is

An Ideal Spot for the Pioneer.

as hay, water, wood and fish are to be found in abundance throughout its extent. The land adjoining Cowpar lake on the east and south is all arable, being open and rolling. To the northeast, towards Garson lake, the land is also good. It is easy to predict that Cowpar lake will some day be a centre of a considerable settlement, although in 1909 the only occupants were about four families of Chipewyans.

Winefred lake is a large body of water amply stocked with fine whitefish, and Indians both from the south and north come to this lake to catch fish in the fall. The country surrounding the lake is mostly swampy hay land, but might possibly, be easily drained. An unusually large amount of muskeg is found in this vicinity.

About Heart lake the land is all good though somewhat rolling and inclined to be broken. There is no more obstacle to farming around this lake than there is anywhere else between it and Edmonton. The country is identical with that passed through en route to Edmonton. In fact the country is almost prairie, some bluffs of poplar being the only pretence of woods.

Wheat has been grown successfully at McMurray which was the most northerly point reached by the exploratory party in 1909. Here, too, all the ordinary vegetables to be found in the more southerly portions of the province are grown with the greatest success. Mixed farming would appear to be an industry which most readily adapts itself to northern condition. It is undeniable that northern latitudes increase the likelihood of summer frosts. If, however, live stock is kept, the larger yield of grain to the acre, even if slightly frosted, will pay quite as well converted into beef or pork as a smaller yield of the better quality grain in more southern latitudes.

The officers of the Royal Northwest Mounted Police have contributed much valuable information regarding the northern section of the country under review in this pamphlet.

In his 1909 report, Inspector D. M. Howard wrote: "In the northern part of the district around Chipewyan and Fitzgerald, very little grain is grown. The Roman Catholic mission at Fort Smith has put in a small crop of about fifteen acres under oats and barley this year as an experiment. There are about thirty-five head of cattle all told in Chipewyan sub-district, but the stock is not very good, being too much inbred. The Hudson's Bay Company brought in ten head of horses this year from Edmonton and the Roman Catholic mission brought four from Vermilion; this, with the three police horses, makes a total of about forty head."

Corporal Mellor (of the Royal Northwest Mounted Police) in September of the same year, made a patrol with horses into the buffalo country southwest of Fitzgerald. In his report the corporal states that from Salt river "we proceeded north-west through about eight miles of small poplar, and then across a large stretch of prairie country. This is not prairie country in the generally accepted term, but simply ground of a marshy nature, perfectly flat, and covered with a luxuriant growth of grass. This would doubtless afford splendid land were it not that the water thereon is intensely salty and quite unfit for use. These prairies are of large extent stretching from Peace river, in the south, I am told, to Buffalo river, in the north, a distance of over one hundred miles. They are dotted all over with thick clumps of willows, the only trees growing thereon."

In the last annual report of Superintendent G. E. Sanders, D.S.O., commanding "N" Division at Athabaska, and dated October 1, 1911, that officer describes the area from Athabaska river to Great Slave lake and west to the Rockies as an agricultural country. He states:- "The general state of the district from an agricultural and business point of view is one of great development and progress. With the influx of settlement traders have followed and a general

Air of Prosperity Prevails,

with very optimistic hopes for the future. The homestead entries at Athabaska for the first three months of this year exceeded the entire number for 1909, and for the past months the entries are upwards of one hundred and seventy-five in excess of those received during the whole of 1910.

"It was generally expected that the railway would reach Athabaska in November, but the contractors have met with so many set-backs, due to the weather, shortage of labour and, lately sickness amongst their horses, that it is extremely doubtful when the work will be completed.

"As a consequence of the coming of the railway the town of Athabaska has experienced quite a boom in real estate, and the prices for lots in the townsite and for land adjoining have become very high, lots that sold for three hundred dollars last year are now exchanging hands at three thousand dollars,

and land within a mile has been sold for one hundred and seventy-five dollars per acre. A great deal of building is going on and every one predicts an important future for the place on account of its many natural advantages, and its situation making it the distribution point for the vast country to the north."

In an interview, Hon. F. Oliver, ex-Minister of the Interior, stated, after his long trip in 1910 that along the rivers passed through proceeding from Edmonton to the delta of the Mackenzie where the banks are high the soil and climate conditions are perfectly good for agriculture. So far as McMurray, conditions are entirely good for agriculture, judging from what he saw himself and from what people told him.

The Minister explained this statement by pointing out that the difference in latitude is neutralized by the great drop in altitude and the

Influence of the Warm Chinook Wind.

McMurray, while two hundred miles farther north than Edmonton, is but eight hundred and fifty feet above sea level, while Edmonton had an altitude of two thousand two hundred feet.

Mr. Oliver here made reference to conditions which are to-day recognized by men of science.

According to Mr. E. A. Preble, of the U.S. Biological Survey "The climatic conditions of the various parts of the Athabaska valley vary considerably, according to location. The more open portions of the upper part of the valley, though lying at a considerable altitude, enjoy the 'Chinook' winds, which so temper the climate that it compares favourably with more

Mud flats at Chipewyan

easterly regions lying much farther south. Lack of detailed data precludes the possibility of comparing absolutely the climatic conditions of the upper and the lower Athabaska; but the effects of the 'Chinook' winds are felt to some extent throughout the course of the river."

According to the same authority "The climate of Athabaska lake is not radically different from that of other parts of the Mackenzie region which are practically removed from the influence of the warm Pacific winds. Though it lies at a low altitude, the proximity of the lake to the 'Barren Ground,' from which winds are frequent, keeps its average temperature rather low. An occasional warm west wind slightly tempers the winter climate. The Peace and the Athabaska break up at their mouths about May 1, but the neighbouring part of the lake usually does not open until about the middle of May, and the eastern part probably not before June. The lake usually closes at Chipewyan some time in November."

Mr. H. A. Conroy informed the Senate committee of 1907 that he had travelled through Athabaska-Peace river country once when for twenty-one days in January he did not need his coat in the middle of the day. The cattle were all out in the pasture fields. He had been going in there every year for eight years, and had been there for five winters. Mr. Conroy stated that he never saw a very deep snowfall in that country. He felt pretty sure that the 'Chinook' winds go through to Athabaska lake. He remarked that in that country in the winter he did not suffer as much from cold as he had suffered in Ottawa, and he slept out every night, sometimes under a tent and sometimes in the open. He travelled once with a dog train and afterwards with ponies, and got along very well with them.

Settlements.

In the neighbourhood of McMurray many well-stocked farms are to be seen. Cereal crops sown in the fertile valley of Clearwater river produce very good yields, wheat being thirty bushels per acre and oats fifty bushels. McMurray, which is the proposed terminus of the Alberta and Great Waterways railway, has grown considerably during the past year, the site it occupies at the junction of the Athabaska and Clearwater rivers being a particularly fine one. The settlement boasts of an hotel, several stores, poolrooms, restaurants and even a local telephone service, and, in addition, is connected by Government telegraph with Edmonton and the adjoining towns.

A large area of country north of Lac la Biche consists of undulating and well watered land, the soil being a sandy loam beneath which is a good clay subsoil. Lac la Biche settlement is essentially agricultural, offering great opportunities to farmers.

The settlements at Chipewyan, Fitzgerald and Fort Smith at present consist of a mission, boarding school, store, police barracks and a heterogeneous assortment of Indian shacks and teepees. Chipewyan is probably the most

important. It occupies a fine site on the north shore of lake Athabaska near its western extremity.

Fitzgerald is the divisional headquarters of the Royal Northwest Mounted Police. During the summer months both this place and Fort Smith exhibit marked symptoms of industry, due to the movement of cargoes destined for the north, but as winter sets in they again relapse into a state of oppressive inactivity.

Very successful crops of wheat, oats, barley, and roots are grown annually on the experimental farm operated by the Department of Indian Affairs near Fort Smith, whilst the hay crop of this locality employs many men during the summer months. The hay lands are very extensive, the indigenous grasses being blue and brome grass. These are remarkable for their luxuriant and heavy growth and the comparatively short time which they take to mature, due to the exceptionally long hours of sunlight which are experienced in these latitudes during the summer months.

Vegetables such as carrots, beets, cucumbers, peas, lettuce and onions are raised with great success at Chipewyan, the garden worked by the missionaries being a great tribute to the industry of the lay brethren.

WATERWAYS AND TRANSPORTATION.

Athabaska river is navigable for flat bottomed steamers of three feet draught from Freemen river to Grand Rapids, a distance of two hundred and ninety miles, and from McMurray to its mouth in Athabaska lake, a distance of two hundred and eighty-five miles. The intervening section, about ninety miles in length is practically a succession of rapids, only navigable, and then at considerable risk, by flat bottomed scows drawing about sixteen inches of water when loaded. Steamers sometimes proceed a few miles up Clearwater river when the water is high, but no definite schedule of sailings is ever attempted. The Hudson's Bay Company which has utilized the Athabaska for many years has now decided to relinquish its transport on the river and adopt the Peace river route, thereby reducing the element of risk and delay due to the necessity of transferring goods at Grand Rapids. Athabaska river's greatest field of utility will be as a producer of almost unlimited water-power at Grand Rapids, the banks are abrupt and six hundred feet high. The river rushes with great violence and there is a fall of sixty feet in less than half a mile and a considerable discharge. The river at this point is bifurcated by an island, thus permitting of the construction of a dam under fairly advantageous circumstances.

The Alberta and Great Waterways railway is in course of construction from Carbondale, a point on the Edmonton Dunvegan and British Columbia railway about twelve miles from Edmonton, to McMurray. The track has been laid beyond Lac la Biche and the grading practically completed to McMurray. When this railroad is in operation a great number of settlers will be attracted to the district, as the route of the railroad passes through very good farming country.

The Slave river basin is also very well supplied with an abundance of cheap water transport. The rivers Rocher, Slave and Peace are all navigable for flat bottomed steamers of four feet draught and the numbers of smaller tributaries which act as feeders for these arteries are capable of carrying a large traffic by means of smaller craft. Slave river is a rather sluggish waterway, as far as Fitzgerald except at a point about fifty miles from the post up stream, known as the "Demi-charges" where there is a swift riffle which, however, does not offer any obstruction to navigation. The banks are low, but after passing Fitzgerald the river changes in character and flows swiftly between high banks for a distance of seventeen miles forming a succession of rapids known collectively as Slave rapids. These constitute the only hindrance to navigation as far as the Arctic ocean. There is a fall of one hundred and twenty-five feet in this distance and the current is so powerful that it is impossible to run the rapids with any boat or scow used in the transportation of freight. Supplies and commodities for the north are usually transhipped

at Fitzgerald and hauled over land a distance of fifteen miles to Fort Smith where they are again placed aboard steamer for through shipment to the mouth of the Mackenzie. Recently work has been commenced upon tramways at Slave rapids which, when completed, will greatly facilitate the movement of cargoes on these northern waterways.

The Slave rapids, especially at Mountain rapids, afford excellent opportunities for the development of water power. Mr. William Ogilvie, in a letter published in the Ottawa Journal, February 19, 1910, writing of the water power susceptible of development on Slave river, stated: "When making my survey in 1888, I deduced the total fall in the river in this stretch by observing the angles of depression or elevation of each survey station from the preceding one, and with the distance between stations deducing the rise and fall; in this way I found the total fall to be two hundred and forty-seven feet. The instrument I had to use was not of a high order of precision for this purpose; nevertheless, I feel safe in saying the fall is between two hundred and thirty and two hundred and sixty feet. All the drainage basins of Peace and Athabaska rivers, and lake Athabaska, are in one here, and with this fall in so short a distance the power possibilities, when required, will be tremendous."

Mr. Ogilvie, upon another occasion, speaking of Athabaska river, said: - "The current averages well over four miles an hour, but the rate varies much with the height of water. At Grand rapids falls, the fall is about sixty feet in one quarter of a mile. They are a fine sight and will, when required, develop a lot of power."

The water powers of Alberta, and the other prairie provinces, are controlled under regulations of the Dominion Government, providing for control of rates, reasonable rentals, and limited grants, and offer to the public a reasonably sure and safe return on investment. These regulations are administered by the Minister of the Interior.

* The water power possibilities on the Athabaska river are very great. The only unfortunate feature is that these rivers and their splendid possibilities are situated so far to the north and distant from the settled portions of the province. But even where they are, it will only be a relatively short time before they are utilized.

*Extract from 1915 report of the Commission of Conservation.

Big timber, Clearwater Valley.

TIMBER RESOURCES.

In his evidence before the Senate committee of 1888 Professor John Macoun, Botanist to the Geological Survey said:—

"There is an abundance of timber in the vicinity of Chipewyan on lake Athabaska. There are as fine spruce in the Athabaska delta as are to be found in any part of the northwest. I have measured trees on the Embarrass river that were two feet and a half in diameter and were very tall.

In 1907 the Senate committee was informed that from McMurray up in a westerly direction, for about twenty miles, there is very good timber. Trees had been seen that would make one thousand feet of lumber. From Athabaska to House river there is timber still standing in spite of fires. The timber consists of some patches of spruce of a fairly good size, and the rest is poplar. From House river to McMurray all the timber has been burned out.

While the Athabaska district may not offer much attraction to the lumber operator, yet there is sufficient small timber to satisfy the requirements of the settler.

Mr. H. A. Conroy of the Indian Department, in his evidence before the Senate committee of 1907, stated that he had been east of lake Athabaska as far as Fort à la Corne. All along the rivers there is good timber, particularly on Slave river. On the lower levels of the Athabaska, through to Athabaska lake, there is heavy timber all the way along. Mr. Conroy did not know what was behind the timber belt, but believed it was pretty muskeggy. That was what the Indians told him. He had been up the river by boat every year for eight years. Taking the country as a whole, there is quite

A Lot of Marketable Timber

in close proximity to all the rivers and lakes. There are millions of cords of spruce for pulpwood.

Mr. Conroy, in a report to the Superintendent of Forestry, January 17, 1910, wrote:—"That part of Athabaska river north from McMurray to Fitzgerald is fringed with a heavy growth of spruce and black poplar. The spruce is quite large, and from an economical standpoint will be of great value in the future. A considerable part of this country is also excellent for agricultural purposes. From McMurray southwest to Athabaska there is quite a quantity of valuable spruce and poplar which has been saved by the watchfulness of the guardian, William Biggs, who makes his trip up and down that section of the river. He is one of the most useful men in the north.

During the summer of 1910 Mr. W. Hayes, a capitalist and manufacturer of Duluth, Minnesota, made an exploratory trip through the Athabaska country with A. Violette. Mr. Hayes stated in an interview on his return

to Edmonton that there was timber enough in Athabaska district to supply western Canada for the next half century.

Interviewed in Edmonton after his long trip in 1910 the Hon. Frank Oliver, at that time Minister of the Interior, stated:—"All the way from Edmonton to Fort Macpherson the country, along the rivers at least, is level and forested. There is no prairie. On the upper part of Athabaska river the banks are from one hundred to two hundred feet in length, and the country is well wooded. There is a considerable amount of spruce of good size, but the timber is chiefly poplar. The country has at one time been altogether under spruce, but fires have wrought havoc in it. The explanation of these fires is that all freight for the north country goes down Athabaska river and the men who steer the scows down walk back along the banks. They are careless with their camp fires and the result is a continual danger of further destruction by fire."

A large area lying between the Clearwater river and Gregoire lake is covered with a dense growth of merchantable spruce and fir; also in the neighbourhood of Moose river and Buffalo lake the timber is unusually large and in good condition.

Other species of timber such as poplar and cottonwood grow to good size in scattered patches. The scrub timber is for the most part restricted to the following species:—jack pine, birch, aspen, willow and alders.

There are some excellent stands of spruce along the banks of the Slave and in the district lying contiguous to the junction of the Peace and the Slave rivers towards the west, but the timber is scattered or occurs in patches at intervals. There are small saw-mills operated at Fitzgerald and near Fort Smith by the Department of Indian Affairs and the Hudson's Bay Company respectively, but the logs cut at these mills do not exceed twenty inches as a rule.

During the exceptionally dry summer of 1915 disastrous forest fires have swept the entire North country, especially in those areas adjacent to the travelled routes. An unfortunate result of these conflagrations is that owing to the character of the land devastated, reforestation, either natural or artificial, will be a matter of considerable difficulty, probably sixty per cent of the burnt over forest area consists of a light sandy or even rocky soil, and once the humus covering has been burnt off, there is very little prospect of the successful germination of seeds.

ECONOMIC MINERALS.

The Athabaska country, according to the reports of travellers, geological explorers and prospectors, is a veritable storehouse of mineral wealth, its natural richness in this respect including iron, coal, gypsum, salt, sulphur, galena, natural gas, petroleum and bituminous sands or asphaltum.

The Senate committee of 1907 was informed that a half-breed had taken one hundred and fifty dollars worth of gold out of a bar in the McLeod river at a place called Assiniboia. Gold had also been obtained, opposite the mouth of Lesser Slave river in the Athabaska.

It was further stated that at Black bay, on lake Athabaska, there is a first class galena which contains gold and copper. Some of the product at Chipewyan was assayed and it contained six or seven dollars worth of gold. "There is a big seam near Black bay and it can be traced until it comes to an island. It is a very fine country for gold and there have been several attempts to make something out of it but the time is not yet ripe."

Indications of Iron.

Indications of the presence of iron have been found on Clearwater and Athabaska rivers.

According to Mr. R. G. McConnell's 1888 report: - The Pelican sandstone on the Athabaska is usually capped with a bed of hemitiferous sandstone varying in thickness from a few inches to four or five feet. A specimen of the rock was examined in the laboratory of the Geological Survey, and found to contain 12·4 per cent of metallic iron.

Evidence was given to the committee in 1907 to the effect that a large amount of ochre was found on the eastern bank of the Athabaska river, between Athabaska and Grand Rapids. There had also been observed a large amount of hematite iron between Athabaska and the mouth of Slave river, while on Slave river itself, large bodies of magnetic ore were indicated by the action of the compass, which gets entirely out of order.

Coal and Lignite.

The committee was informed that there was a good quantity of bituminous coal at McKay which could be used for common blacksmithing, but not for welding. Where exposed and worked, this seam goes down about five or six feet deep and it appears to be getting larger. There is quite a bit of coal taken out every year by the people living at Chipewyan.

There is another fine seam of coal at a little creek named Horse creek, about a mile and a half south from McMurray on the east side of the Athabaska

river. Coal may also be found in other places. There is a seam, for instance, about two miles below Stony island.

W. F. Bredin, late member of the Alberta legislature, confirmed the above evidence as to the deposits of coal near McKay, which is about twenty miles north of McMurray.

Mr. R. G. McConnell stated in his 1888 report that on the Athabaska, the Grand Rapids' sandstone is lignitiferous, some of the seams being from four to five feet thick, but the quality is usually inferior. Several small seams also occur imbedded in the tar sands.

On the lower part of the Athabaska the limestone which is exposed all along the river is of a very good quality. There also exists clay fit for puddling and brick making. Sand of the very best quality for making glass is abundant and this industry is bound to come into existence and to be profitable through the proximity to cheap fuel and intense heat in the form of natural gas in the country.

Salt Mines.

Harmon, writing in his journal at Chipewyan as long ago as 1808, wrote: "About sixty miles from this, down Slave river, there are several places where almost any quantity of excellent, clean, white salt may be taken, with as much ease as sand along the sea shore. From these places, the greater part of the north west is supplied with this valuable article.

Before the Senate committee of 1907, it was stated that at Salt river, salt was found right on the surface. There is a spring which comes out of the ground, and the water is so salty that it cannot take up any more. Right at McMurray one hundred and fifty feet of rock salt was found. The traders and Hudson's Bay Company's people come down and take it with shovels, and they sell all the salt that is used along there. It is taken from Salt river. Witness did not know what they got for it.

In his report of 1888, Mr. McConnell writes:—"At La Saline, on the Athabaska, twenty-eight miles below the Forks, and about two miles above the mouth of Red Earth creek, several mineral springs occur about half a mile east of the river on the edge of the valley there, sixty feet deep The deposits from the springs, consisting principally of calcareous tufa, cover the face of the escarpment and have also built up a cone on the top of the bank ten to fifteen feet high and about two hundred feet wide. The water is strongly saline, holding a considerable percentage of sodic-chloride. Sulphuretted hydrogen gas escapes from the bank in several places and taints the air for some distance from the springs. Besides the calcareous tufa the cone contains small deposits of common salt, gypsum and native sulphur, while pure tar, derived from the tar sands beneath, issues from the banks in two places. The springs feed a shallow lake which is situated at the foot of the escarpment, and is surrounded by a clay flat partly bare and partly covered with coarse grasses."

Sulphur Beds and Springs.

It was explained to the select committee of the Senate in 1907 that there are sulphur beds and springs between McMurray and lake Athabaska. Extensive sulphur deposits are found on the east side of Athabaska river between McMurray and the lake. "It is inland about two miles, and in some places it is found in large quantities, and beyond the lake, at several places on both the east and west shores of Slave river. In some places there is a very large amount of sulphur coming from an old crater, in the shape of saline water. This saline water at spots runs over three or four acres; the water evaporates, and the sulphur remains."

Tar Sands.

One of the most promising features of the mineral wealth of the Athabaska district is the undoubted existence of huge deposits of bituminous sand commonly called 'tar sands.'

Dr. S. C. Ells of the Mines Department, Ottawa, states: "The bituminous sands of Alberta outcrop at a large number of points along the Athabaska river and its tributaries, for many miles to the north and south of McMurray. Certain of these outcrops represent portions of the deposit which should prove to be commercially valuable."

The commercial value of these sands depends altogether upon their adaptability for use, in a more or less crude condition, in the construction and surfacing of a certain class of road and in pavements. It is hoped that the present hindrance to development of the mineral resources of this northern

Asphaltum or bituminous sands on Athabaska river, near McMurray

district will be removed by the early completion of the railway now under construction to McMurray.

When these sands have been thoroughly tested, and their value established, as it is confidently expected it will be shortly, an almost limitless market is opened up. In addition to the utility of these sands in road work, already referred to, other cases suggesting themselves are: floorings for many classes of building, such as mills, hospitals, schools and skating rinks; lining for walls; also for fire-proofing roofs and similar purposes. It is claimed by many engineers that bitumen such as this, which owes its present form to natural distillation, is superior to that derived from the artificial distillation of petroleum.

These bituminous deposits are now being thoroughly investigated by the Department of Mines, and Dr. Ells has spent the last three seasons making detailed maps of the more accessible portions.

Several tons of selected materials were taken out by teams to Athabaska, in the winter of 1914-15, and brought to Edmonton. Pavements constructed from this material were laid in the latter city and have stood the test of winter. The Mines Department is arranging to continue the investigation into these deposits and to demonstrate their commercial utility. In order to render these sands available for extensive use in road making throughout western Canada, it will be necessary to devise a process of separating the bitumen from the sand, so that it may be commercially practicable to export the former from the district to the large centres. Provision is also being made to study the chemistry of the extracted bitumen. It appears quite likely that a number of by-products may also be derived.

The area represented by actual outcrops of these sands is probably not less than seven hundred and fifty square miles. Extensions of the deposit under heavy cover, particularly toward the south, will greatly increase this estimated area.

*"The investigation made revealed the fact that the tonnage of bituminous sands in the McMurray area is very large. It is found that some twenty per cent of the material, representing many millions of tons, may be considered as of commercial value.

*It is believed that with proper manipulation, such as heating, and addition of a hardening flux, the penetration of the bitumen can be reduced to meet the requirements of standard specifications for its successful employment in the laying of pavements in substitution of imported asphalt."

Experimental Borings for Petroleum.

In 1893, at the suggestion of Mr. McConnell and Doctor Dawson, the Dominion Government began experimental borings for petroleum in the Athabaska region.

* Extracts from 1915 report of the Commission of Conservation.

The importance of actually ascertaining, by means of boring operations, the existence or otherwise of economically valuable bodies of petroleum in the region had been recognized for many years, but the remoteness of the district and the apparent impossibility of immediately utilizing any discoveries which might be made, had hitherto prevented the necessary experiments. A vote of seven thousand dollars was obtained from Parliament for the purpose of initiating this work, the arrangements for which were entrusted to the Geological Survey. After careful consideration, it was determined that a bore-hole should in the first instance be sunk at Athabaska, at which place the depth of strata to be passed through in order to reach the horizon of the "bituminous sands" had been estimated by Mr. McConnell at approximately from twelve to fifteen hundred feet.

On October 24 the bore-hole had reached a depth of one thousand and eleven feet, when it was found necessary, owing to the incoherent character of the rocks, to stop work pending the arrival of more casing. This was placed in the hole during the winter, but the drilling itself could not be resumed till the spring, as the great quantity of gas met with rendered it dangerous to keep a fire in the derrick or anywhere in the vicinity of the well. The first boring was unavoidably abandoned at a depth of one thousand seven hundred and seventy feet, without reaching the probably oil-bearing beds at the base of the cretaceous formation but within a short distance of attaining these beds.

During these particular boring operations, according to the engineer in charge, at three hundred and thirty-four feet a large flow of gas was struck. The roaring of the gas could be heard half a mile away from the works. The foreman who had seen the big gas well at Kingsville, Ontario, stated that the flow of gas was as strong as in that well.

Second and Third Borings

The second and third of the experimental borings in search of petroleum in the northern part of Alberta were begun early in the summer of 1897 near the mouth of Pelican river on the Athabaska and at Victoria on the Saskatchewan below Edmonton respectively. The sites selected for these borings were determined largely by the knowledge of the stratigraphical succession and the thickness already gained in the first bore-hole at Athabaska. The borings at Pelican and Victoria had reached depths of eight hundred and twenty and seven hundred and five feet respectively before winter. Operations were resumed at both places in the spring of 1898, as soon as the requisite arrangements could be made. Work had been suspended at Pelican in 1897 because of a very large flow of natural gas, under great pressure. It was hoped that most of this gas might blow off during the winter, and it was found, in fact, to be considerably reduced in amount when the locality was again reached by the engineer in charge in 1898. Work was resumed, but additional and very strong flows of gas were soon met with in the underlying

beds, and after exhausting every method of mastering them and continuing the boring, it became necessary again to suspend operations.

In regard to the actual existence of petroleum, the results of the government borings have not up to the present stage been satisfactory.

The boring near the mouth of Pelican river penetrated the lower sandy beds of the cretaceous formation for some distance and demonstrated the existence of a thick tarry petroleum or maltha, besides that of great reservoirs of natural gas. It proved impossible to carry out this boring to the very base of the cretaceous shale and into the underlying formation, in which the existence of a more fluid and merchantable oil was still to be hoped for.

Doctor Dawson, reporting upon the result of these operations, stated:—"The bore furnishes additional evidence of the existence in these north lands of a vast gas field. The seemingly uniform continuity of the cretaceous beds, makes it almost certain that gas wells may be obtained by boring over a great area. Unfortunately the Pelican boring, like the boring at Athabaska, did not penetrate deep enough to furnish reliable information as to the existence or non-existence of petroleum of a high quality. The presence of low quality petroleum maltha is demonstrated, but as the more liquid oil may very probably underlie this, and as we did not reach a sufficient depth to determine the point, the result is unsatisfactory."

Why the Boring was Stopped.

The following extracts from the report of the engineer in charge of the boring operations at Pelican river, Mr. A. W. Fraser, are interesting, and show how and why the operations came to an abrupt termination:—"I used some of the heavy petroleum or maltha which flowed from the well in raising steam, and it made an extremely good fuel.

"If the hard slate stratum at eight hundred and twenty-one feet six inches had been pierced, a great flow of petroleum might have, in my opinion, been encountered. Indeed it is altogether possible that at that depth we were within a few feet of a large body of petroleum. Had it been struck while the flow of gas was in an unconquered condition, the result would have been disastrous, as there might have been no possible means of checking the flow. The flow of gas was so great that a cannon ball could not have been dropped down the pipe.

"At seven hundred and seventy-three feet a heavier flow of gas was struck. It made a roaring noise coming out of the bore, and had quite a pronounced petroleum odour. Increased quantities of petroleum in the cuttings at these depths were encountered.

"At eight hundred and twenty feet a tremendous flow of gas was struck, which blew every drop of water out of the bore. The roar of the gas could be heard for three miles or more. Soon it had completely dried the hole, and was blowing a cloud of dust fifty feet into the air. Small nodules of iron-pyrites, about the size of a walnut, were blown out of the hole with

incredible velocity. They came out like bullets from a rifle. We could not see them going, but could hear them crack against the top of the derrick. It was impossible to do anything with the bore that day, so we were forced to let it stand just as it was. There was danger that the men would be killed if struck by these missiles. The next day a long stick was put on the tools, so that the men could turn them without getting too close to the bore. In this way we succeeded in penetrating through eighteen inches of a conglomerate mass of these iron-pyrites nodules which, embedded in oil, were ejected by the gas as we drilled.

"At eight hundred and twenty-one feet six inches a very hard stratum of slate was encountered, which we penetrated about three inches. We could get no water down the well on account of the strong flow of gas, so we could make no further progress with the drill in this hard cutting. The danger to the men was so great that they refused to work longer over the bore. We then put the four and five-eighths inch casing down to the very bottom, hoping to shut off the gas, but it failed to do so."

Terrific Pressure of Natural Gas.

Work was resumed here in 1898 (Geological Survey Report, Vol. XI, page 33a). It was thought that the flow of gas might have decreased, but on work being resumed and the hole being cleaned out "the gas which had increased in power with the cleaning of the hole cut the walls down and blew clouds of sand and gravel higher than the derrick." Subsequently at eight hundred and thirty-seven feet such a strong flow of gas was struck that they were obliged to suspend operations. Mr. Fraser further says in the same report:- -"I proved the general excellence and utility of the gas during the season, using it for my boiler, cook-stove and for lighting. I had only a one inch pipe, tapped into the side of the casing, and probably did not use the one-hundredth part of the gas coming from the bore, but there was sufficient to make all the steam necessary on my twenty-five horse-power boiler, keep fire in the stove, and also to supply a strong flare-light. The gas burned beautifully clean. In working at the bore, the screeching and hissing of the gas, when at all confined by the presence of the tools inside the casing, or from other causes, was so great that the men complained of pains in their ears and heads."

In the winter of 1910, Corporal A. H. Schurer, of the Royal Northwest Mounted Police, made a patrol from Athabaska to McMurray. In his report he states. "I visited the oil wells that had been sunk at Poplar island, six miles below McMurray. I could see very little with the exception of the machinery, as the snow had covered everything up. Claims had been staked out between McMurray and McKay for oil, during the past two months, and I understand that Clearwater river is to be prospected for petroleum and other minerals.

Gas well at Pelican.

Natural Gas.

The Senate committee of 1907 had its attention drawn to the waste of natural oil gas at the government bore-hole at Pelican Portage. One of the witnesses stated that it was still burning, when he went up in the month of June, 1906, it blew about eighteen or twenty feet. Four years previously he found it was about forty feet, a vertical stream. It exploded with such force that not one hundredth part of the gas had a chance to be inflamed. Witness expressed the opinion that this is the biggest well on the face of the earth.

W. F. Bredin, before the Senate committee of 1907, stated that for miles along Athabaska river the natural gas is all the time escaping from the clay banks of the river itself, because all across the river you can see the bubbles rising. The witness had lighted some of the gas vents and boiled his tea pail by hanging it over the flame.

More Important Gas Springs.

According to Mr. McConnell, the most important natural gas spring in the district occurs on the Athabaska at the mouth of Little Buffalo river. The gas here forces its way up from the bituminous sands, through two hundred and fifty feet of the Clearwater shales and issues from the surface in numerous small jets distributed over an area fifty feet or more in diameter. Some of the jets burn steadily when lighted, until extinguished by heavy rains or strong wind, and afford sufficient heat to cook a camp meal. A good spring was noticed on the left bank of the Athabaska about thirteen miles below the mouth of Pelican river. The volume of gas escaping here is less than at the mouth of Little Buffalo river, and in order to reach the surface it is obliged to penetrate five hundred and seventy feet of shales and sandstone which here overlie the bituminous sands.

Mr. McConnell adds: - "The natural gas springs have less value in themselves at present than in the indications they afford of the existence of petroleum beneath."

GAME, FUR-BEARING ANIMALS AND FISH.

As the northernmost portion of northern Alberta includes a considerable part of the range of the herds of wood buffalo (Bison athabascae), which are the sole remnant, living in a natural state, of the countless millions of American bison which existed when the northwest was first opened up, it is a country of especial interest to the naturalist and sportsman. It seems to be agreed that the wood buffalo is exactly the same species as the buffalo of the plains, being descended from herds or individuals which drifted into the wooded country to the north for pasturage or protection, and finding conditions congenial, remained there. Within the memory of living men the wood buffalo of northern Alberta and beyond were immeasurably more numerous than they are to-day, and they would probably have suffered extermination before this had the Dominion government not stepped in and enacted laws to protect closely the remaining herds.

The wood bison formerly ranged over immense areas north to Great Slave lake and Liard river, but it is now restricted to a few small herds inhabiting that part of the country enclosed by the Peace, Slave and Hay rivers.

Hon. William Christie, ex-member of the Northwest Council, and late Inspecting Factor of the Hudson's Bay Company, examined before the Senate committee of 1888 stated that at that date the wood buffalo roamed over the Athabaska country, chiefly in the woods; but in the summer they came down to lick the salt at the salt springs in the valley of Salt river, which flows into Slave river.

Mr. H. J. Moberly, another Chief Factor of the Hudson's Bay Company, submitted a statement in writing to the Senate committee of 1887 in which he stated that as to wood buffalo there was a band, probably about two hundred, between the Saskatchewan and Athabaska. They kept to the mountains between Lac la Biche and McMurray, and another band, probably about three hundred strong, was between Athabaska and Peace rivers on Thickwood and Birch mountains. A third band, probably seven hundred strong, was scattered through the mountains between Liard and Peace rivers, and from Salt river to the foot of Rocky mountains.

In 1907 Inspector A. M. Jarvis, C.M.G., was specially despatched from headquarters at Regina to the Athabaska country to ascertain the existing numbers and conditions of the wood buffalo.

Inspector Jarvis, accompanied by the well known naturalist, Mr. E. Thompson Seton, left McMurray for the north on June 29. He wrote in his report at this point: "Rumours that the wolves were destroying the buffalo were current everywhere. Some went so far as to say that these wolves were a new and larger race come in from the barren grounds, to prey on them.

Such rumours were repeated at every point in much the same words, without details. This aroused my suspicions."

At Fitzgerald where the party arrived June 7, the Inspector met Pierre Squirrel, chief of the Chipewyans, and arranged for a meeting of the chiefs and hunters who know the buffalo country near there. At the meeting next day, Mr. Jarvis told them he had come to investigate the buffalo question, and if necessary, to take steps for the destruction of the wolves; that he must go in person to the buffalo country, and if possible see the buffalo and the wolves. Countless objections were raised to his plans. The whole country was under from one to five feet of water, accord' g to one statement. The party would not get a dry spot to sleep on, according to another. They would be devoured by flies; would die of rheumatic fever; it was impossible to find the buffalo; they might be hundreds of miles off at that moment.

On the thirteenth, Inspector Jarvis left Fitzgerald and after a long day's march in a west-southwest direction reached Salt river. None of the swamps so much talked of proved very serious, and it was evident that all were dry in late summer. At one point only was a true bog seen and it extended for only half a mile. The following day, following the course of Salt river downward, the first buffalo were sighted. Inspector Jarvis writes in his report: "The trails, wallows and chips of buffalo became noticeable, bu' as they were old we gave them only passing note. But when two perfectly fresh ones appeared, we dismounted to follow them on foot. I took charge of the horses as the flies were very thick, and sent Mr. Seton on with his camera. Beaulieu stalked them exactly as he would a moose, and in about an hour led Mr. Seton to an open glade where in plain view were

A Herd of Thirteen Buffalo

two big bulls, one calf of this year, and the rest cows and yearlings. Their photograph was taken three times at sixty yards, before they became alarmed and ran off."

"Bear tracks abound everywhere, and that night Beaulieu shot an old bear and two cubs within fifty yards of our camp."

The Inspector reports as follows as to the next day's operations: "Beaulieu and myself started out at 6.45 a.m. and travelled around the west side of Salt mountain until 10.40 p.m., following fresh tracks of two buffalo, until we came upon fresh tracks of what appeared to be a large herd. We tied our horses in the woods and followed along for about a mile through wet, swampy ground, until we came in sight of a bunch, all of which were lying down except three large bulls. They were on a large salt lick. We crawled up to within (which we afterwards measured) fifty paces of them, through the brush. I took out my glasses but owing to our position, could not get a correct count of them. After resting for a little while we both walked into the open. I took out my pocket book and wrote down as follows:—"Four big bulls, one yearling, four little calves, three two-year-olds, and eight cows."

They then saw us and got up one by one and stared at us, showing how easily they can be approached and killed. Beaulieu then shouted and they galloped into the woods. The bulls were magnificent looking animals. They had not yet shed all their winter coat, but the cows were sleek and fine looking. Before going into the open, Beaulieu, who had his rifle along, said, 'Mon Dieu, major; let m[illegible] one cow.' I explained to him that we would be fined five hundred dol[illegible] and that I would lose my position. He then said, 'Let me k[illegible]m one[illegible]r the Government.' But I would not permit it. We returned to t[illegible]p where we had left Mr. Seton and that evening moved our camp to a spot where we thought these animals might pass. But we saw no more of them. As we

Had Seen Thirty-Three of these Animals,

and the fresh tracks of ten or twelve more, possibly bulls, in the woods, we concluded that we had seen all the buffalo in this particular district. And as there was no time to go to Peace point and rapid de Beaulieu, and keep our word with the guide, I decided to return, to go to Fort Smith and arrange if possible to see the band reported to be in the Caribou mountains, near Hay river. We looked everywhere for buffalo bones, but found only four very old skeletons, with nothing to tell how they had been killed. At all drinking places, muddy lakes, marshes and salt licks we looked particularly for tracks of wolves and found very few. I got a glimpse of one small wolf, or possibly coyote, in the woods, and heard one coyote calling, just as we were leaving the mountain, he having smelt the bear we had killed. We found the skull of one wolf killed years ago, but I am forced to conclude that wolves are scarce here, and I found ample justification for my suspicion that the constant cry of 'wolf' is a mere ruse to divert attention from the two-legged depredators, who are really doing the mischief.

"Other game abounded. Bear tracks were seen on every side. Caribou are said to be plentiful in winter. Moose are common. I saw one without doing any hunting. This is important for the buffalo, as several well known hunters claim this region as their hunting and trapping grounds. They go in ostensibly to kill moose and come out abundantly supplied with pemmican, but bring out very few moose skins. I am informed by the traders here, that a few years ago these hunters begged sale for moose skins, but of late years scarcely any have been brought out. This is very suspicious, to say the least of it. These men did all they could to prevent my going in, and I consider it no longer doubtful what is destroying the buffalo.

Other Game and Fish.

Some interesting evidence as to the general fish and game resources of the whole north, and more particularly northern Alberta, was submitted in writing to the Senate committee of 1887 by Mr. H. J. Moberly, a chief trader in the Hudson's Bay Company's service. This gentleman, through long resi-

dence and frequent travels therein was quite familiar with this country. According to his statement lake trout are found in almost all the large lakes all over the country, and river trout in Athabaska and Peace rivers and other streams close to Rocky mountains. Speckled trout and mountain trout are found in waters on the east and west slope of Rocky mountains; whitefish, all over the country from the Saskatchewan north, in lakes and most rivers; pickerel, in most lakes; jackfish or pike in most lakes; suckers, in all waters; gold-eye, Athabaska river, Peace river and their tributaries; a peculiar kind of salmon (doubtless the 'inconnu'), in Mackenzie river as far up as Salt river rapids, above Great Slave lake.

Ducks are found all over the country and geese and swans along the Athabaska, the Peace, the Mackenzie, and the shores of Hudson bay; cranes, along the Athabaska, the Peace and the Mackenzie; prairie chickens, Athabaska and Peace river countries; ruffed grouse and spruce partridge throughout this north country; ptarmigan, Athabaska and Peace rivers, Hudson bay; plover and snipe in every locality.

According to Mr. Moberly, moose run all over the wooded country north of the prairies and east of Rocky mountains.

The distribution of other game and fur animals in far north-western Canada was given by Mr. Moberly as follows: Reindeer (caribou), large, all over the timbered areas, from Saskatchewan to the barren grounds in the north; reindeer, small, all over the barren grounds in the north, and come south in winter as far as Lac la Brochet, Athabaska lake and Peace river, close to Rocky mountains; red deer, Athabaska and Peace river valleys; black tail deer, jumping deer and chevreux, same country as the red deer; black and brown bears, all over the wooded country and Rocky mountains; grizzly bears, Rocky mountains, valley of the Peace, Athabaska, Liard, and Fraser, but seldom farther than two hundred and fifty miles from the foot of the Rockies; beaver, Athabaska, Peace river, and in fact throughout the Northwest.

Back's Grayling.

Professor John Macoun, before the Senate committee of 1888, said he had caught Back's grayling in the tributaries of Peace river,in Rocky mountains. It is both an Arctic and a mountain fish, and delights in clear water. It is very gamesome and takes all kinds of bait. When it took the bait it would jump clear out of the water, many times a couple of feet or so, and of course, the beautiful colours (more beautiful than those of the mackerel even), glistening in the sun, made the anglers thrill with excitement. They are a white fleshed fish, and not anything like as hard as the trout.

Writing of the immense quantities of fish caught in lake Athabaska Mr. Wm. Ogilvie states in his report: "At Chipewyan, the Hudson's Bay Company required, in the fall of 1888, thirty-six thousand fish for the use of the post; the Roman Catholic mission, twelve thousand; and the rest of the population at least thirty thousand more. Most of these were caught in three weeks,

Saw mill at Fitzgerald.

while I was there. Sometimes they are numerous in one place and sometimes in another, so that long journeys are often necessary from the place where they are caught to the place where they are to be used. This necessitates a large number of dogs to haul them home, which is a very poor method, though it is the only one in use. To overcome this inconvenience, Mr. McDougall, at Chipewyan, has built an ice-boat, but has so far met with indifferent success, as the ice has been usually rough during the last two falls."

The principal fish to be found in the north is the whitefish. The chief use made at present of this valuable fish is for dog feed, large numbers being caught for this purpose in the annual "fall fisheries," as they are termed. Besides the whitefish, the jackfish is also found in most of the lakes, and indeed in that country which lies to the west of the height of land and on the watershed of Athabaska river this is the principal fish. Although extremely good food in these cold northern waters they are, of course, not to be compared with the white fish. The perch, or as the natives sometimes call them, the doré, are found in most of the rivers and lakes. During the summer months they form the staple diet, as the whitefish apparently go into deep holes in the lakes and are not caught by the natives, who rarely fish in deep water.

Describing an ascent by him of Big Buffalo river, in 1909 Sergeant Mellor states: –"The cutbanks are riddled with sulphur springs (the odour of which overhangs the whole river), interspersed in peculiarly intimate proximity with streams of beautifully fresh water. The river was literally alive with 'coneys,' a species of fish somewhat resembling a salmon, and which attains a large size; the name is a corruption of the French name for the fish 'poisson inconnu,' –the unknown fish. They were apparently ascending the river for

spawning purposes; it was quite unnecessary to use a net or line to catch them, as it was a simple matter to throw them on land with a paddle or stick. For the next twenty miles the river, while still running with great velocity, has not so many rapids to encounter, and the going is considerably better. The banks are lower, and in many places were clothed in berry bushes of all kinds, and simply riddled with bear tracks. We did not have the good fortune to kill one of these latter, although we saw them several times."

SYNOPSIS OF REPORTS OF GOVERNMENT SURVEYORS AND EXPLORERS.

1915.

The length of the navigable waterways of the Athabaska lake sections has been estimated at about sixteen hundred miles and t be great opportunities for water power development. These water destined to become more and more important as settlement and the ment of the country advance. Railways will supersede them to extent, but only in the southern half of the regions where the popul be mainly a farming one.

The soil of the Athabaska district for the greater part is a splen suitable for growing the best crops and a large amount of the land is for agriculture. The levels show that the country can be easily The land in the river flats is particularly good.

It has been demonstrated beyond doubt that the entire count in all economic minerals, including coal, sulphur, salt, petroleum a minous or tar sand. Indeed the investigations which have be respecting the extent and quality of the latter product have show enormous industry will probably be developed by the exploitation sands for commercial purposes. All along the Athabaska river heavy deposits of tar and asphalt.

The depth of water is always sufficient for steamers of light dra advent of the railway to McMurray will open up a large section, wh cleared will be suitable for agriculture.

Lac la Biche, and McMurray are already thriving settlements, a located.

The flats of the Clearwater are heavily timbered, averaging inches in diameter, and throughout several districts, there is a health of spruce, pine and tamarack.

There is an abundance of small fur bearing animals, and the lake in fish, and are the homes of myriads of wild fowl. Moose are pl several districts.

ORERS.

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